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AESTHETIC EXPERIENCE OR RESPONSE?

A PSYCHOLOGICAL VIEWPOINT

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Psychology has been plagued throughout the centuries by such concepts as spirit, psyche, soul, mind, consciousness, and experience. At the turn of the century we frequently found psychology defined as the "science of the mind," the "study of consciousness," of "mental life," or "experience dependent on the experiencing individual." Even today, it is still popular in many quarters to define psychology as "the science of behavior and experience." Such writers claim that the concept of behavior is too exclusive. It omits a great deal of private mental life.

What these writers fail to realize, of course, is that all psychological activity may be considered as natural, observable events. Much of their so called "experience" is just as natural if considered within the proper frame of reference.

The field of psychological aesthetics has been especially bothered by this mentalistic interpretation. For example, the writer was once criticized by a musician of considerable reputation for attempting to develop a set of tests to measure musical ability (5). His critic's contention was that one should not "rush in where angels fear to tread." "Art is the domain of the spirit and such psychological meddling will accomplish nothing. Since talent is God given, its measurement is impossible," he said.

During the nineteenth century, beauty was considered the province of philosophy. It was considered a universal characteristic, inherent in some objects, not in others, to be appreciated only by those who had the proper endowed perceptive powers. Gradually, a recognition of the diversity of standards of beauty began to be accepted. Then, an understanding of the nature of the object alone was not enough, nor a study of the "powers" of the perceiver, but a consideration of the interaction of the two, organism and stimulus object, was necessary.

Many students of the problem have maintained that the aesthetic significance of an object lies in its power to evoke some emotional expression. Others, like Hanslick (2), have objected to this interpretation, claiming that the aesthetic value is to be found in the object's form. Hanslick argued against the idea that aesthetic principles could be deduced from feeling experiences alone. The aesthetic experience was primarily not an emotional one. The meaning of the object was to be found in the form itself and was inseparable from it. Beauty was in the experiencing of the thing itself, the form. Thus, the individual with a true capacity for the aesthetic experience did not need to rely on the emotions or associations which might be derived from it.

Quite a different view was voiced by Seashore (8) about a half century later. Working in the field of musical aesthetics, he claimed the experience came from the meaning the music conveyed to the listener, be it a feeling, desire or inspiration. Whether the experience derived from the form of the music or from the feelings it brought to mind was immaterial. The mark of a great musical

composition was its purely emotional appeal which might also emphasize the associated imagery in an infinite variety of ways.

Both these writers accepted the concept of the aesthetic experience as some internal state, "an inner psychic state," or "conscious feeling."

These previous attempts to describe the aesthetic experience have resulted in vague verbalizations. A more adequate method which will utilize observable events is needed. Therefore, a more objective approach must consider the aesthetic reaction as a special kind of psychological activity, bearing the same characteristics of behavior as other kinds of events. Such an analysis considers an organism, on the one hand, interacting with a stimulus object, called aesthetic, on the other.

In an analysis of the aesthetic behavioral event, we must realize that we have two sets of conditions under consideration. They are the responses and the aesthetic stimuli. On the response side we must consider the kinds of activity involved as well as the individual's unique background of development and personality equipment. On the stimulus side there are the many objects and circumstances which are both natural and cultural in nature.

The aesthetic object.-- All varieties of objects and things are capable of performing the stimulus function of arousing the aesthetic reaction. Many of these objects may be natural, such as landscapes or, more specifically, animals, human beings, plants, rivers, or even geologic formations. The stimuli may also be contrived objects, the product of aesthetic activity. In this group we include what are usually called art objects, such as pictures, paintings, statuary, music, and ornaments, to name a few.

Among the many properties which this aesthetic object has there is a special one we call beauty or beautiful. The characteristic of beauty is independent of the responding individual just as such natural properties as redness or hardness are. However, unlike these simple universal properties, the responses made to a work of art or beauty extant in nature are largely conditioned by an individual's cultural reactions (4, p. 421).

This quality of beauty may be further reduced to such attributes as form, balance, harmony, melody pattern, rhythm, etc., depending on the kind of aesthetic object we are considering. Any stimulus could become beautiful to someone. However, we do not usually designate an object as beautiful until there is some consensus in the group with regard to it.

The aesthetic response.-- On the response side we single out a number of different kinds of reactions called aesthetic. There are the creative, the appreciative, the evaluative and the critical (4, p. 419-421). All of these involve the interactions with aesthetic objects.

Creative activity involves the development of conceptual responses to some object and the consequent performances of a number of technical operations resulting in the final production of some aesthetic object. Critical activity involves responses of comparison and discrimination concerning the methods and techniques involved in the production of works of art. The evaluative responses

may be to a certain extent non-aesthetic in nature, involving, perhaps, the economic placing of an aesthetic object, but it may also involve those responses of appreciation and criticism.

The appreciative responses are the ones we will be concerned with in the rest of this paper. These involve more passive responses to the aesthetic object as it exists.

The appreciative aesthetic reaction may be analyzed into at least three behavioral components (3,6). First, the appreciative aesthetic response is attentional. The entire response equipment of a person may be directed toward the object. There is certainly nothing mystical about this. It is primarily a muscular set, observable and measurable. Such attentional adjustments may be postural as well as receptor. Observe a person looking at a painting or listening to a symphony orchestra playing. Many of these responses are observable even to the untrained person.

The appreciative aesthetic response is also a perceptual one. Perceiving objects is one of the most primary forms of behavior. In most aesthetic responses the perception is bound to be a keen and discriminative one, involving reactions to many qualities of the object. It may include recognition of form, color, size, shape or harmony, melody, and rhythm, each separately or in combination. The appreciative observer develops habits by which he may direct his reactions toward one aspect of the stimulus object to the exclusion of others. Further, individual differences in reactivity will exist. One organism may respond primarily to the melody of a musical composition, while another to its rhythmic content. A trained painter is more likely to develop a highly skilled pattern of visual habits. In many art forms, each new presentation of the stimulus brings forth new perceptual elements. Frequently, an observer reports this fact in the following manner: "Each time I hear (or see) the work, I get something new out of it." A more naive perceiver may report that the same work "sounds like a lot of noise," or "looks like a mess of paint." This person has not developed the same highly skilled organization of perceptual habits as has the artist or trained musician. In this sense the naive observer is aesthetically deficient.

Many music students report that Wagner's Der Ring des Nibelungen takes on "new meaning" after they have studied the various leitmotifs in relation to the characters and action. They have simply learned to perceive more discriminatively the various elements of the musical stimulus object. Likewise, the student is better able to appreciate a sonata or symphony after he has studied the musical form and analysis. It is evident by now that the perceptual response in aesthetic appreciation is a function of a long developmental history of aesthetic interactions.

Finally, the appreciative aesthetic response may be an affective one. Such a feeling response, of course, is not disruptive. It will involve many of the non-movable parts of the body. Measurements can be taken of changes in breathing, pulse rate, blood pressure or galvanic skin response, to cite only a few of the various possibilities.

These internal responses in the aesthetic interaction have been experimentally demonstrated. A few examples in the field of musical aesthetics will suffice. Weld (11) played a variety of musical compositions for his students and found a definite tendency for cardiac activity to increase during music. He reported, further, that irregularity in the amplitude of respiration was noted under

conditions of music. Washco (9) observed that pulse rate and blood pressure increased while subjects listened to music played on phonograph records.

Changes in skin resistance during conditions of music have been reported by Dreher (1), Phares (7), and Wechsler (10). The general tendency is for such physiological activity to increase rather than decrease when music is played. These changes also vary directly with the intensity of the feeling response reported verbally by the subjects. In many cases, these responses appear as by-play activity during the aesthetic event. The more central reactions seem to be those of attention and perception.

The appreciative aesthetic reaction, then, is a highly complex one, acquired during the life history of an organism's interaction with aesthetic objects. Some of the learning will be of a contrived nature in which certain skills are taught. Other responses will be acquired casually over a period of time as the individual interacts with many of the possible aesthetic stimuli about him.

The aesthetic event appears to be subject to the same principles of behavioral analysis as are other forms of psychological activity. It is natural, observable and measurable. An objective interpretation considers the event as including the functions of the aesthetic object and the responding organism. Only one kind of aesthetic event has been considered in detail in this paper, the appreciative one. Here, the reactions of the individual to the object are attentional, perceptual and affective. This complex activity, often involving highly skilled responses, develops throughout the life history of the organism in a milieu of aesthetic circumstances and conditions which surround the person.

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A CONTRIBUTION TOWARD INTERBEHAVIORAL ANALYSIS

I. SOME GENERAL CONCEPTS

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In raising questions concerning the interbehavioral analysis of extinction Ratner (5) asks for clarification of several interdependent concepts. He seems to be asking about a unit of behavior, a technique for handling situations encompassing multiple units, and elaboration of the stimulus function and response function concepts. He also asks about "rules" for applying these concepts in concrete situations. We are not sure just what Ratner means by "rules" or whether there can be any in a descriptive science beyond procedural operations for altering interactions. But his request is pertinent, and it deserves the continuing attention of interbehaviorists to accumulate descriptive constructs which will pertinently reflect the findings in selected experimental research areas. The Psychological Record is an important vehicle for its subscribers to share their relevant thinking in the form of frequent notes and articles. A continuing series of provocative items would help to place the interbehavioral framework more vitally into the stream of current research and help to prevent the stagnation that accrues to undue mutual admiration. The present paper offers an initial and tentative statement of the authors' thinking applied to the problems of learning and extinction as suggested by Ratner. The interbehaviorist will recognize that we can hold no claim for originality or uniqueness of the following ideas.

Analysis Levels.-- Using the maze as an example, it seems to us that the analysis of the learning-extinction process might well begin with the "learned action" as sort of an anchor event. The "learned action" is the S ↔ R coordination which meets the experimenter's criterion and is achieved by the organism in the experimental setting. This concrete interaction might be looked upon as Kantor's (3) level I psychological event: the Existence-Occurrence Level. The rat, upon being put into the entrance box of the maze, makes an errorless run to the food box and eats the food; this illustrates the "learned action." Another illustration of the "learned action" would be when the rat, upon being placed in the Skinner box, immediately moves to the bar, presses it, picks up the pellet of food and eats it. The task of the investigator is, of course, to describe, within the particular behavior situation, the conditions which make for the development and dissolution of the "learned action." This description, initially, would be close to the crude datum level. The experimenter reports in all relevant detail (not solely time, errors, or rate of responding) the organism's interactions through the series of trials which preceded the occurrence of the learned action, the interactions of the learned action trials, and the interactions of the extinction trials. We think that the process of formulating descriptive constructs can be helped by the perspective afforded in recognizing the learned action as the anchor event and then working through the descriptive protocols of preceding trials to find how the

1. We wish to acknowledge the contribution of Dr. N. H. Pronko of Wichita University, who assisted in the discussion phases of these topics but who sailed for Europe before the drafting of this article. The responsibility for interpreting Dr. Pronko's thinking rests solely with the authors.

particular $S \leftrightarrow R$ coordination develops and the protocols of the succeeding trials to find how it becomes non-operative. The descriptions by the experimenter would constitute Kantor's level II event: the Observation Event Level. The attempt to formulate descriptive relationships between variables and more abstract level constructs would be in the area of level III: the Investigation Event Level. Kantor's analytic levels IV and V may be regarded as higher level assessments and, though their implications permeate level II and III events, do not at the moment warrant detailed attention.

Continuity and Functionality of Psychological Events.-- Given the crude level descriptions of the events, the investigator, in his interbehaviors toward formulating descriptive constructs, must include two major dimensions of the events: the continuity of behaviors and the functional character of the components of the events which indicate their adjustive or psychological nature. Intrinsic to the events observed in the learning-extinction process is an historical dimension. A psychological event at any moment has a history. This is as true on the initial trial of a learning experiment as it is elsewhere in the series. On the initial trial the organism has a history of movement when hungry or thirsty. It has previously interacted with stimuli localizable, in part, within its structure. That the organism is now alive attests to the success of such actions. The organism also has a greater or lesser sensory discrimination history as well as a perceptual reaction history which have developed as a function of "random" movements and contacts with objects, organisms, and conditions in its pre-experimental life, usually in the home cage. The details of this pre-experimental history and its "explanatory" possibilities have not been adequately investigated for the rat, or for that matter, for most experimental uses made of human organisms. It is pertinent, for the kind of descriptive constructs that the interbehaviorist makes, that the full implications of the pre-experimental reactional history of the organism be exploited (1, 6). Behavior is always a continuous process, and the failure to recognize and utilize this has resulted in the formulation of conceptualized internal mechanisms, e.g., drives, needs, etc., which are better described as historically evolved forms of interaction. We have, incidentally, an urgent need for formulating specific descriptive constructs that will take the historical dimension pertinently into account. It is suggested that the organism's perceptual reaction systems may be the focus for this historical continuity. The implications of the continuity of interactions within the experimental sequence of trials making up the learning-extinction process are obvious. But even these are neglected when the experimenter confines his description to time per trial or errors per trial or rate of response or to any narrow combination of these. Such are usually insufficient in themselves to serve as a foundation for an interbehavioral analysis since they do not adequately describe the concrete interactional events. Perhaps not so obvious as the importance of the past reactions is the importance of the future reactions for an understanding of the current behavior. At the end of a series of unreinforced trials the behavior which constitutes the experimenter's criterion for learning becomes non-operative. We emphasize non-operative. A single or a few reinforcements brings it back to full strength. Even without reinforcement it becomes operative through the mechanism of so-called spontaneous recovery. The full implications of the "extinguished" $S \leftrightarrow R$ coordination cannot be drawn without both the past and the future interactions being taken into account. Recognizing the continuous character of behavior is imperative for adequate descriptive constructs.

Equally pertinent but not so obvious is the need for care in the description and analysis of the components of the psychological events. Physical properties of the behavior settings constitute one level of analysis. Component factors such as

illumination, shape, size, distance, direction, etc., must be known to the investigator in isolation as well as in their relationship as a field of factors. However, for the investigator to presume that the factors of the behavior setting are viewed by the experimental organism as they are viewed by him constitutes an approach easily subject to errors of description. The task of the experimenter, once he has specified the variables as they are perceived by him, is to further analyze the operation of the pertinent variables for their significance to the experimental organism. This may involve the determination of the range within which physical dimensions can be modified without changing the response function of the experimental organism. It involves, too, changes in the conditions of the responding organism. The task, here, is, of course, a complex one. In research we have two psychological fields of factors: that of the experimenter and that of the experimental organism. The error implicit in confusing these two fields of factors for the formulation of descriptive constructs is a serious one. Perhaps the most pertinent error here is in what is regarded as the stimulus. The stimulus which the investigator intends for the experimental organism may be totally different from that with which the experimental organism interacts. The way in which stimuli operate, frequently couched in energy terms of physics by the investigator, may not be solely this at all to the experimental organism. The literally vast variability of responses to the same stimuli as well as the diversity of stimuli that may be interacted with in the same way make necessary the description of the psychological stimulus on a level other than in physical terms. Much the same can be said for the concept "response." To consider the response as simply movement fails to do full justice to the adjustive nature of the psychological event, and results in the conceptualization of a variety of hypothetical internal mechanisms.

The Behavior Segment.-- It is perhaps in some of these difficulties with the concepts of stimulus and response that we find the problem of circumscribing and delimiting the behavior segment. When it is recognized that the psychological stimulus is not confined to the physical properties of objects and that the psychological response is not solely a matter of movements of the organism, the task becomes somewhat clearer. When we recognize, also, that behavior segments are abstractions within ongoing behaviors, selected by the experimenter, but tied to a particular behavior setting and to the actions of the organism within this setting, its use becomes further clarified. It becomes a tool for analysis, a unit for description, a convenience for the investigator in isolating and interrelating the ongoing actions of the organism. For some behavioral events, the ordinary behavior segment ($S \leftrightarrow R$) may be too small a unit to work with conveniently. In some situations the segment is clearly delimitable, while in others the behavior segments have to be teased out to meet the purposes of the investigator who has constant contact with the ongoing behaviors. In the typical reaction time study or the tachistoscopic study its limits are clear. For the free flowing situation of the individual grinding out the draft of a publication it may be too small a unit and perhaps we should call a circumscribed multiplicity of units such as this a "behavior situation" (2). Still greater multiplicity of situations, such as careers or historical psychopathological studies, also probably warrant independent definition (7). It appears that the greater the degree of control the experimenter exercises over the organism's behaviors the easier it is to circumscribe the behavior segment.

The "Learned Action" Segment: An Integration.-- With regard to delimiting behavior segments for the learning-extinction process raised by Ratner we note that in the classical CR situation the limits of the unit are rather clear because the experimenter has regular control over stimuli presented. In the instrumental CR

situation or the maze situation the limits are less clear inasmuch as the experimenter exercises less control. Since stimulus functions must be derived from observations of responses, the experimenter must make continuous and detailed observations of the actions of the organism, especially with respect to those variables instrumental to the organism's success as defined by the experimental situation. We would suggest that in the typical multiple-T maze at the time when the learned action is achieved, i.e., the rat starting from the entrance box, rapidly running the alleyway, making errorless turns, and eating the food, the interaction be regarded as a single functional unit, a single behavior segment. The actions during the preceding learning trials, when the hungry rat moves about, apparently at random, in and out of blind alleys, can perhaps be best described as a series of behavior segments or a behavior situation for each trial. The movings, sniffings, pausing, scratchings, restings, etc., during the early trials indicate a multiplicity of behavior segments, perhaps not all easily correlated with particular stimulus conditions. Once the rat has found and eaten food at the goal box a stimulus-response function has begun to operate, but one which the rat has not yet developed into the specific reaction system pattern that the experimenter requires as an errorless response. With each succeeding "reinforcement" at the goal box the stimulus function-response function with respect to the food becomes stronger and a trend for fewer exploratory behavior segments per trial occurs--fewer runnings into blind alleys, sniffings, scratchings, restings, etc. The interactions during the learning trials in the maze may be described as resulting in increased strengthening of the food-stimulus-function-true-path-reaction-system-pattern. Some of the earlier exploratory behavior segments drop out while others are integrated as reaction systems within the learned action behavior segment. In the process of a series of learning trials the maze setting comes to be perceived as having a food-stimulus-function, and a coordinate true-path-reaction-system-pattern becomes the response function. At the stage of the errorless run the effective behaviors are integrated into what is perhaps best described as a single coalescent behavior segment. This same analysis may be applied to the bar press where pressing the bar and eating the food are not distinct segments; the bar press becomes part of the response just as writing one of the letters in your name is part of the response of writing your name. The S \leftrightarrow R evolution of name writing provides another example at the human level. Initially, a child in learning to write his signature typically interacts discretely with each required movement or change of movement so that the stimulus "write your name" sets up a series of S \leftrightarrow R's which eventuates in a labored production. Later on, as learning progresses, we do not consider the product as a simple summation of these behavior segments but rather, the responses become integrated into a single response function with a dropping out of many discrete segments, so that we now have a polished act which forms a complete and unitary response to a stimulus, an action which is qualitatively distinct from the prior behaviors.

The Dissolution of the "Learned Action."-- Following the first unreinforced trial in the maze, the food-stimulus-function-true-path-reaction-system-pattern may begin to break down or it may continue to operate as it did during the final stages of learning for several unreinforced trials. Sooner or later evidence will appear of the dissolution of this particular stimulus-response function. Latency increase, blind alley entrances, etc., may be regarded as the evidence. If reinforcements in the maze were less than 100 per cent, one would predict a larger number of trials before evidence of the dissolution of the stimulus-response function would occur. (This does not seem to have been experimentally tested for the maze situation.) With continuing non-reinforced trials it is suggested that one would observe a return to multiple behavior segments in the maze, at first in the area of

the goal box and later in other areas of the maze. These would not necessarily be identical with, nor all of, those found during the initial learning trials. One might predict that after extinction in the maze the quantity of discrete exploratory or "irrelevant" behavior segments would be significantly decreased, since the food stimulus function of the goal box, now not operative to bring about the true path reaction system pattern, may operate to inhibit exploration of other areas of the maze. That the food function is to be regarded as non-operative rather than eliminated can, as noted above, be demonstrated by spontaneous recovery or a single reintroduction of reinforcement.

The Perceptual Reaction System.-- Implied in this description, but not always easily isolatable, is that the rat performs discriminating and perceiving reaction systems as components of his responses. These operate and evolve during the learning series of trials. We would define the discriminating components of the responses as sensory differentiations of objects or portions of objects in the immediate setting conditions of the organism. The perceiving components of responses evolve as stimulus functions, that is, as orientations, recognitions, meanings, or significances of objects or portions of objects in the immediate setting. These evolve as a result of direct contacts with the objects. We mean, here, that the organism's specific actions with respect to the objects results in these objects taking on stimulus functions or stimulus meanings for the organism. The stimulus function or stimulus meaning is reflected in the adjustmental reaction made to the object and we label the specific adjustmental significance of the reaction the response function. In this analysis the focal point of the learned response is the perceptual reaction system. On subsequent contacts of the organism with the object this stimulus function-response function is likely to occur, although subject to some variability in the organism's movement configurations. We say that on subsequent contacts the particular stimulus function-response function is likely to occur because a history of contacts (within the series of trials) may be necessary for the coordination to evolve. Interference effects of other previously acquired stimulus functions may be operative. During the process of the organism's multiple exploratory interactions with components of the stimulus setting these specific stimulus function-response function coordinations evolve and become integrated, that is, come to operate as an integrated series of reaction systems. The food stimulus function coordinates with the eating response appropriate to the organic condition of the organism. Because of the appropriateness of the food to the condition of the organism, the food stimulus function becomes the central one, the stimulus function with which all of the response functions coordinate. The total maze setting comes to be perceived by the organism in terms of this central stimulus function.

We have suggested that extinction is the process of dissolution of this particular food-stimulus-function-true-path-reaction-system-pattern. The focal point for analysis of the dissolution, we would suggest, is in the altered perceptual reaction system. The continuation of unreinforced errorless runs is attributable to the continuing operation of the perceptual reaction system. With continued unreinforced trials the perceptions of the organism are modified, and this results in the dissolution of the particular stimulus function-response function coordination. This dissolution may begin after the first unreinforced trial or it may take several trials before the evidence for this begins to appear (increased latency, blind alley entrances, etc.). Just as a series of contacts were necessary for building up the coordination, several contacts or trials may be necessary for it to be broken down. The stimulus function changes; and this change is focused in the perceptual reaction system. No implication should be drawn that the extinction process is behaviorally just the reverse of the learning process. The organism again performs multiple behavior segments in the maze after extinction but these, as we have suggested, are influenced by the previous stimulus function of the maze. The now "extinguished" perceptual reaction is not eliminated--as evidenced by its being readily reoperable.

Implicit Interactions.-- One further point should be made briefly, but one which is significant for interbehavioral analysis. Kantor (2) has described perception as semi-implicit. This means that objects are perceived in terms of their implications for actions of the organism, in terms of functional associations based on prior interactions with the stimulus objects. This would appear to indicate that the rat is not bound solely to the properties of the object with which he is in direct contact for his response functions, but that he may, in limited ways, interact with objects or conditions with which he is not, at the moment, in direct contact. This raises a question of the extent to which the rat engages in implicit interactions--and to what extent the construct of implicit interaction may be utilized in describing the behaviors of rats in standard research situations. Maier's (4) so-called "rat reasoning studies," as well as other researches, appear to indicate that such interactions are possible. Studies designed to further test the appropriateness of this construct with operational criteria should be performed.

In summary, we have suggested with regard to the learning-extinction process that behavioral events must be viewed by the investigator as historically and functionally interrelated. The behavior segment is described as one which evolves as an integration of separate behavior segments. The focal point of this process of development and dissolution of particular stimulus function-response function coordinations is the perceptual reaction system. We have suggested, too, that implicit interactions may have a place in the description.

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THE EFFECT OF PRACTICE PLUS INFORMATION

UPON LEARNING THEORY: A BOOK REVIEW

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Theories of learning (2nd ed.). By E. R. Hilgard. New York: Appleton-Century-Crofts, 1956. Pp. ix, 563. \$5.50.

Hilgard's revision of his 1948 classic, Theories of Learning, despite the inclusion of much material from the earlier edition, gives the immediate impression of being a new book and a far superior one. Learning theorists in general, and Hilgard in particular, seem to have learned a lot about learning and learning theorizing in the eight years since the first edition. On the whole, this is an excellent book primarily as an undergraduate or first-year graduate text, although it is not without value to more advanced students. In considering the book in greater detail I will first indicate the extent of the revision before proceeding to an evaluation of strengths and weaknesses for the book as a whole.

Extent of the Revision.-- The second edition is considerably fatter than the first. Four new chapters have been added: one on Freud's Psychodynamics, one on Mathematical Models, and two on current trends. The earlier chapters on Wheeler's Organismic Psychology and theories influenced by field conceptions have been dropped. In the remaining chapters which have been carried over from the first to the second edition there has been a consistent attempt to bring the material up to date and to improve upon weaknesses of the earlier book. The chapter on Hull, for example, deals with Hull '52 rather than Hull '43. In reviewing each theory Hilgard retains the schema of his earlier book. He presents a sympathetic survey of the major concepts and principles of the theory along with a detailed review of the experimental studies in one area relevant to the theory. This is followed by an evaluation of the theorist's position on six "fundamental questions" and also of his contributions.

As might be expected, some of the revised chapters are more successful than others. Perhaps the least successful chapters are the first and the last, which have been carried over almost unchanged from the first edition--to which, incidentally, they contributed just about as little. The revised chapter on Thorndike has been augmented by a lengthy consideration of experimental investigations of the spread of effect. In view of the current status of spread of effect and the diminishing importance of Thorndike's views it would seem that Thorndike's contributions merit a good deal less space than they have received. The chapter on Guthrie, while not radically changed, is an improvement over the earlier one, and the chapter on Skinner is excellent. The revised Tolman chapter, on the other hand, is weak, but then Tolman's sprawling programmatic schema and his frequent shifts from one set of neologisms to an equally unpalatable and not quite equivalent one certainly don't facilitate the task of the reviewer. The chapter on Gestalt theory is relatively unchanged, a reflection of the fact that Gestalt contributions to learning have been very meagre in recent years (in earlier ones, too, if I may venture a personal opinion). The chapter on Lewin, on the other hand, has been greatly expanded. The chapter on Freud's Psychodynamics is, in the opinion of this reviewer, no great contribution. Its relevance is questionable and its pious preachiness is downright objectionable. The lengthy review of experimental studies

of repression does not, at present, seem warranted by the importance of the concept to theories of learning. If, on the other hand, Hilgard had wanted to survey the increasing prominence of the concept of anxiety in learning theorizing he would have done better to present a chapter on Miller and Mowrer and--for the sake of compulsive completeness--the Iowa anxiety-scalers.

Another chapter whose right to inclusion is questionable is that on contemporary Functionalism. Surely, devious reasoning underlies the treatment of an eschewal of formal theorizing as a theory of learning. Historical Functionalists, Woodworth, and the devoted gatherers of data on verbal learning of the nonsense--or not much better than nonsense--variety, form the bulk of the chapter. However, since Hilgard's "six questions" derive almost directly from Melton, it is no great surprise that Functionalism scores high on adequacy with respect to these criteria.

The chapter on Hull's system is one of the best summaries of this elaborately metamorphosing theory that this reviewer has read. Moreover, it is a critical review; and Hilgard's criticisms are almost always well-founded. Finally, the chapter on the emergence of mathematical models, while sketchy and incomplete in its treatment of the work of any one theorist, provides a good survey of trends in this relatively new and promising area.

The Strong Points.-- The major advantages of the book result from its clarity, its comprehensiveness, its thoroughness, and its currentness. In his coverage of each system Hilgard attempts to provide not only a summary of the theory per se, but also an indication of its historical basis and course of development, as well as the kind of research done within the system. The historical background is, of necessity, sketched in broadly with little detail, but that it is included at all is cause for rejoicing. Recently, there appears to be less and less concern with the historical influences operating in the development of a given system. Nor is such an ultra-contemporary approach altogether absent in Hilgard. For example, on page 291, in discussing Freud's suggestion of the relationship between pleasure and the relative change in level of excitation, Hilgard comments: "...in this he followed a classical psychologist, Fechner, who wrote along the same lines earlier." Aside from the questionable basis for singling out Fechner in this connection, one is surprised at the implication that Fechner is so far removed in the dim and dusty past. Such an assertion is not justified even with respect to Herbart, whose relevance for a discussion of Freud's metasystem is a good deal more obvious.

In his treatment of each theory Hilgard achieves a clear and sympathetic exposition of major concepts and principles--occasionally, but by no means always, at the expense of a more critical evaluation. Moreover, he provides an indication of the course of development which the theory has taken, citing earlier papers as well as the most recent ones. (In the case of theorists like Hull, whose early papers were far superior to the most recent ones, this is an advantage.) In many cases, Hilgard makes use of recent material which is as yet unpublished and unavailable to the average student (e.g., Skinner's recent work and Spence's Silliman lectures). In view of today's long publication lags this is a real contribution. In fact, Hilgard's extensive use of the literature (there is an excellent 58 page bibliography) and his condensed chapter references are among the most useful features of the book. For added utility to the student the chapter references are arranged under several headings: books, shorter introductions, critical reviews, representative experiments, and annotated final notes.

Another appealing feature of the book is the survey of relevant experimental areas which constitutes a sizable portion of each chapter. Recent books on psychological theory have tended either to bundle together a heterogeneous collection of papers (e.g., Marx, Stolurow) or to present a very detailed analysis of the construction of the theory (e.g., Estes, *et al.*). Either approach, by its very nature, tends to underemphasize the importance of data in the formation and revision of a theory. Hilgard, on the other hand, stresses the interrelationship of data and theory. From a pedagogical standpoint this coverage of experimental evidence makes the book much more comprehensible to the undergraduate who takes a course in systems with no additional background in learning. At the same time, it has a salutary effect on the graduate student who often tends to become enamored of theory for its own sake.

To this reviewer one of the most exciting aspects of the book is the set of two new chapters on current trends. As the title implies, Hilgard reviews here a number of areas in which research and theory construction have been especially active: need, drive, incentive, and the nature of reinforcement; discrimination; cognition; and neurophysiology. Hilgard's addition of the summary of these areas, aside from its contribution to the completeness and currentness of the book, reflects current trends away from doctrinaire devotion to established theories and toward increasing independence in research, trends which make it difficult to include the work of many active theorists under the rubric of a particular school. Hilgard interprets these trends as evidence of an increasingly sophisticated attitude toward the role of theory, viz., more and more theory is coming to be regarded less as a final formulation of THE TRUTH and more as both a provisional explanation of past results and a source of predictions for further research. As more data accumulates, and as theorists become more sophisticated in their interpretation of it, the areas of agreement among divergent theories appear to be enlarging, a state of affairs which Hilgard treats as a good omen for the maturity of psychology as compared with the earlier vogue of the hot controversy and the crucial experiment.

The Weak Points.-- Unfortunately, the entire book is not nearly so good as the current trends chapters. The greatest weakness, to this reviewer, lies in what was not included, namely a good introductory chapter in which the nature and role of theory and the scope of "learning" are treated, and in which a systematic framework for the analysis of current theories of learning is outlined. With respect to the nature and role of theory, even the most elementary consideration of theory construction is lacking. Hilgard does not even introduce such simple distinctions as event and construct or system and metasystem. As a result, both the broad empiricism of Functionalism and the closed formal system of Lewin classify on an equal footing as "theories." In delimiting the scope of "learning," Hilgard prefers to proceed by exclusion, contrasting learning, e.g., with fatigue, maturation, etc. The resulting specification of learning is apparently broad enough to encompass both Gestalt and Freudian Psychodynamics. Hilgard might have presented the material of these two chapters within a framework of "theories concerned with the relationship of perception and learning" and "theories concerned with the relationship of personality and motivational variables to learning." Such an approach, on the other hand, opens the way for possible inclusion of still more tangential material: social factors, behavioral engineering, etc. Obviously, an author must draw lines somewhere. My complaint is that the reader is entitled to know where the line has been drawn--and why.

The failure to establish some systematic framework for the consideration of each system has more far-reaching consequences. Hilgard has made some attempt in this direction with the posing of six "crucial questions" (the same six posed in the earlier edition), which in his opinion must be answered by any worthy learning theory. These crucial six (capacities of the organism; the roles of repetition, motivation and understanding; transfer; remembering and forgetting) have a good solid old-fashioned ring to them. However, while they may be crucial to the educator, the intelligent layman, or the Functionalist, they will provide a relevant basis for the consideration of specific theories only to the extent that theories are formulated on this basis. In most cases, unfortunately, they are not and the attempt to force a theory into this framework often results in a strained and inadequate summary. Forgetting, for example, is neglected by many learning theorists, whereas the non-crucial area of extinction is a major concern. I suspect that Hilgard clings to his crucial problems in the hope of forcing learning theorists to consider them. Certainly, his influence in this direction during the eight years since the appearance of his first edition can have done little to reinforce that hope.

A second result of the absence of an evaluative framework is the infrequent critical analysis of theory construction. There is, e.g., no consistent consideration of such points as (a) the relating of constructs to data language or (b) the comparison of theoretical units with experimental ones--a task so brilliantly accomplished in Modern Learning Theory. Perhaps Hilgard may have felt that the previous publication of Modern Learning Theory made it unnecessary to review the same ground; or, perhaps he considered such questions to be beyond the scope of a text addressed to a potential audience of undergraduates, education students, and other naive organisms. Moreover, Hilgard's own eclecticism may have influenced his decision. Whatever his reasons may have been, Hilgard has done the reader a disservice, I think, by his failure to consider the rules governing the process of theory construction and the extent to which they are observed--or in some cases--deliberately disregarded by each theorist.

A third weakness attributable to the absence of an evaluative framework is the infrequent comparison among specific theories with respect to their treatment of a given area. Occasionally, Hilgard points out obvious similarities, e.g., Ig and maintaining stimuli, but more often comparison consists solely in locating a theoretical position on a vague continuum of something-or-otherness, or enumeration of answers to the six crucial questions. Strictly speaking, of course, comparison is possible only among theories whose concepts reduce to the same data language. Where data language is not shared, superficial analogies are apt to be misleading. In failing to provide a systematic framework by means of which to compare theories, Hilgard has no basis upon which to make these distinctions explicit. As a consequence, each chapter stands as an independent, isolated unit.

Summary.-- Hilgard's revised edition of Theories of Learning is in many respects a new book and an improvement over the earlier edition. Its clarity and comprehensiveness make it an excellent text for a variety of courses, but the absence of a systematic framework for the consideration of theories of learning limits its utility for more advanced and serious students. Perhaps this is an inevitable result to trying to please as many people as possible as much of the time as possible. In the end no one is completely satisfied.

NEWS AND NOTES

Readers are invited, in fact, are urged, to contribute comments on articles published in the Psychological Record. In this connection Dave Herman has written: "I think a sorely needed service can be performed by the Record if readers are urged to offer comment on both the possibilities and limitations of work done...and it won't do to have a mutual back-scratching admiration society."

Since the next issue is scheduled for October 10th please submit your comments by September 1st.

NEWS

With this issue the Psychological Record takes a giant step forward: from publication by mimeograph process to publication by multilith process. By January of 1957 we confidently expect to be publishing in regular journal format.

NOTICE OF VACANCY: The Psychology Department at the University of Wichita, Wichita 14, Kansas, has an opening for an Assistant Professor at about \$4500 for 9 mos., plus summer teaching. Male or female; Ph.D.; 14 hour teaching load per semester; specialization area: social and industrial. Opening for Sept. 1956. Address Dr. N. H. Pronko, Chairman, Psychology Department. Mark envelope Attention: D. T. Herman. Please submit vita if available.